CLAIMS

What is claimed is:

1. A voltage regulation circuit, comprising:

a current sense circuit including a current sense terminal to conduct a current to be sensed by the current sense circuit, wherein a voltage difference between the current sense terminal and a voltage reference terminal is substantially fixed when the current to be sensed by the current sense circuit is substantially equal to a first current sense threshold;

a first impedance coupled between the current sense terminal and the voltage reference terminal to provide a second current sense threshold, wherein the second current sense threshold is equal to a sum of the first current sense threshold and a current to flow through the first impedance; and

a second impedance coupled between the current sense terminal and an input terminal of the voltage regulation circuit, wherein the input terminal has a voltage threshold relative to the voltage reference terminal that is different from a voltage at the current sense terminal by an amount that is a product of the second impedance and the second current threshold.

2. The voltage regulation circuit of claim 1 wherein the first impedance comprises a first resistor.

3. The voltage regulation circuit of claim 1 wherein the second impedance comprises a second resistor.

4. The voltage regulation circuit of claim 1 wherein the second impedance comprises a second resistor coupled in parallel with a capacitor.

5. The voltage regulation circuit of claim 1 wherein the current sense circuit includes a digital output, wherein the digital output is in a first state when the voltage at the input terminal is above the voltage threshold, wherein the digital output is in a second state when the voltage at the input terminal is below the voltage threshold.

6. The voltage regulation circuit of claim 1 wherein the current sense circuit includes a digital output, wherein the digital output is in a first state when the voltage at the input terminal is above the voltage threshold by more than an upper hysteresis offset voltage, wherein the digital output is in a second state when the voltage at the input terminal is below the voltage threshold by more than a lower hysteresis offset voltage.

7. The voltage regulation circuit of claim 1 wherein the voltage at the input terminal is representative of a voltage to be regulated by the voltage regulation circuit.

8. The voltage regulation circuit of claim 7 wherein the voltage regulation circuit is included in a power supply circuit.

9. The voltage regulation circuit of claim 8 wherein the voltage to be regulated is derived from at least one output of the power supply circuit.

10. The voltage regulation circuit of claim 8 wherein the power supply is an AC/DC power supply.

11. The voltage regulation circuit of claim 8 wherein the power supply is a DC/DC power supply.

12. The voltage regulation circuit of claim 8 wherein the power supply is an isolated power supply.

13. The voltage regulation circuit of claim 8 wherein the power supply is a non-isolated power supply.

14. The voltage regulation circuit of claim 1 wherein the current sense terminal and the voltage reference terminal are terminals of an integrated circuit.

15. The voltage regulation circuit of claim 14 wherein the integrated circuit further comprises a power transistor.

16. The voltage regulation circuit of claim 14 wherein the integrated circuit is a monolithic integrated circuit.